Check List 8(1): 177-180, 2012
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ISSN 1809-127X (available at *www.checklist.org.br*)

Check List
Journal of species lists and distribution

NOTES ON GEOGRAPHIC DISTRIBUTION

Acanthagrion hildegarda Gloger, 1967 (Odonata: Zygoptera: Coenagrionidae): New records and geographic distribution map

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ABSTRACT: *Acanthagrion hildegarda* Gloger, 1967 (Odonata: Zygoptera: Coenagrionidae) is a common inhabitant of lentic environments in Argentina and Uruguay. However, precise georreferenced data are scarce in the literature. This work provides the first updated georreferenced list of localities and map of distribution of *A. hildegarda*, including new country records for Brazil and departamental records for Uruguay, accompanied by illustrations and scanning photographs of its main diagnostic characters.

Acanthagrion was erected in 1876 by Baron Edmond Selys-Longchamps to include neotropical species of blue Coenagrionidae. This genus currently has 39 species distributed from Texas, in the southern United States, to central Argentina (Garrison *et al.* 2010). Species are small to medium size and are characterized by: wings generally hyaline; CuP of hindwing reaching the posterior margin of wing; flexure of male genital ligula short; lateral lobes of segment 3, when present, distal to flexure; male cerci slanting from base at an angle of 45° with the posterior margin of segment X, with a dorso-basal tubercle, females without a well defined mesepisternal carina between mesostigmal plates and medio-dorsal carina; generally with mesepisternal fossae on the dorsum of the pterothorax and vulvar spine on abdominal segment VIII (von Ellenrieder and Lozano 2008).

Acanthagrion hildegarda was first described and illustrated by H. Gloger (1967) based on one male from Argentina (TYPE LOCALITY: Entre Ríos Province, Lucas González). The current location of Gloger's collection is unknown; however, identification of males is rather simple because inner margin of each cercus forms an angle of 90° (Figure 1A), state of character shared only with *A. cuyabae* Calvert, 1909, *A. minutum* Leonard, 1977, and *A. truncatum* Selys, 1876. It can be separated from them by its genital ligula (Figure 1B–C) which has setae on ectal surface of segment 2 and a longitudinal ridge on ental surface of segment 3. Its female was described by Rodrigues Capítulo and Muzón (1989) who transcribed the unpublished description made by Bulla in his PhD thesis. It can be easily identified because mesepisternal fossae are slightly elevated and adjacent to interlaminar sinus (Figure 2A). This combination is also found in *A. apicale* Selys, 1876, *A. obsoletum* (Förster, 1914), and *A. speculum* Garrison, 1985, but interlaminar sinus is sub-rectangular in *A. hildegrada* and sub-triangular in the other three species. Its last instar larva was described by Muzón *et al.* (2001) based on reared material from Buenos Aires province (Argentina). Larva is unique among species described for the genus (28% of the species) because it has five setae on labial palp (Figure 2B) versus four in other known larvae. *Acanthagrion hildegarda* inhabits lentic environments or backwaters of rivers and streams where adults can be seen perching on riparian vegetation near water's surface.

Although this species has been previously recorded for Argentina and Uruguay, precise records are scarce in the literature (see Table 1): von Ellenrieder and Muzón (2008) provided and updated checklist of Odonata from Argentina, where they included provincial records for this species, and De Abenante and Phillipi (1982) provided a checklist of species from Uruguay which was updated recently by von Ellenrieder *et al.* (2009). However, none of these include precise information about localities. Recent examination of unidentified specimens deposited in the Museu Nacional de Rio de Janeiro revealed the presence of this species in southern Brazil.

In this contribution we provide an updated list of localities with georeferenced data (Table 1) and a distribution map for *Acanthagrion hildegarda* (Figure 3). Elevation data and longitude/latitude coordinates were culled from the Global Gazetteer website (<http://www.fallingrain.com/world/>) and the Google Earth Plus version 4.2.0205.5730. Maps were created electronically using ArcView 3.3. Specimens examined are deposited in Departamento Científico Entomología, Museo de La Plata, Argentina (MLP), Fundación Miguel Lillo, Tucumán, Argentina (FML), and Museu Nacional do Rio de Janeiro, Brazil (MNRJ). Drawings were made with the aid of a camera lucida coupled to a Leica MS5 stereomicroscope; photographs were taken with a JEOL JSM 6360 scanning electron microscope.

Our current findings increase the northwestern limit of known distribution of *A. hildegarda* to 20°37'03" S, 49°18'01" W, corresponding to the locality of Onda Verde, São Paulo, Brazil. It is important to mention that although *A. hildegarda* had been previously recorded for Uruguay, it

is the first time that locality records are provided for this country.

Finally, we believe that the presence of *A. hildegarda* in Corrientes (Argentina), Rio Grande do Sul (Brazil), Santa Catarina (Brazil), and other departments of Uruguay is very likely and further study of the Coenagrionidae of these areas will fill the gaps on the distribution of this species.

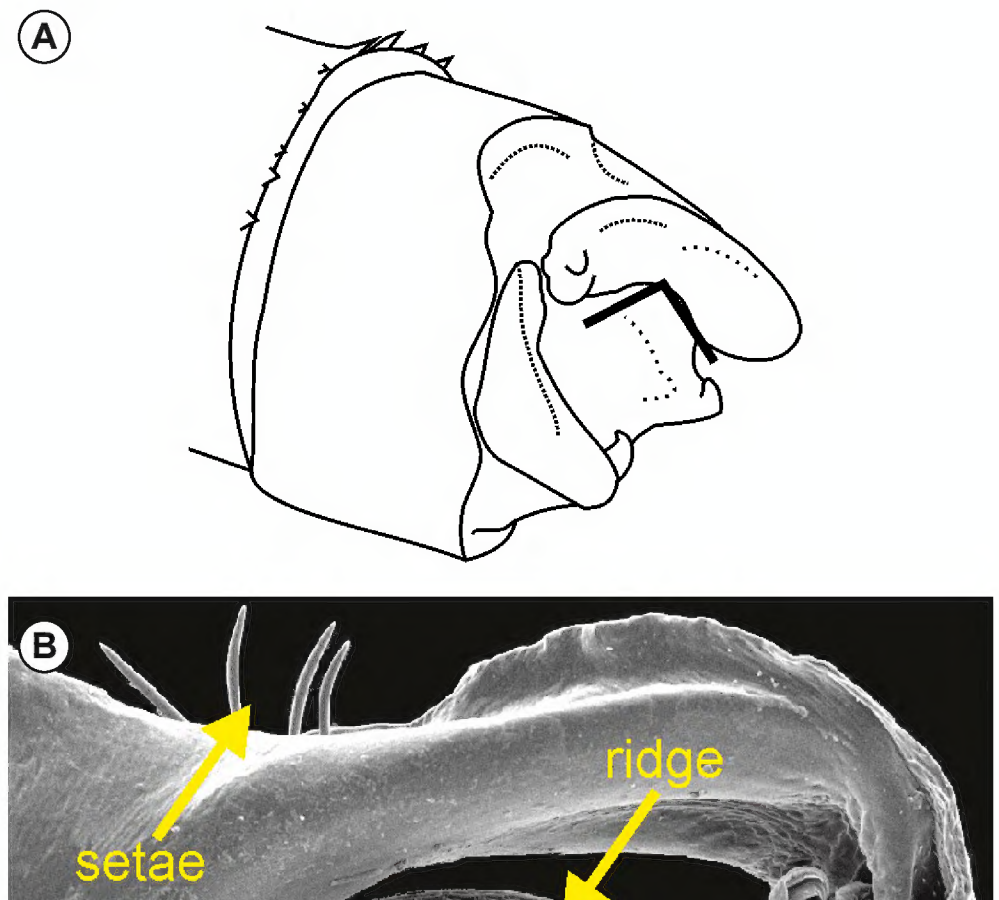

Figure 1. MALE: a–c (Argentina, Entre Ríos, Parque Nacional El Palmar). a) Cerci, dorso-medial view; b) Genital ligula, lateral view showing setae on ectal surface of segment 2 and ridge on ental surface of segment 3; c) Genital ligula, ental view showing longitudinal ridge.

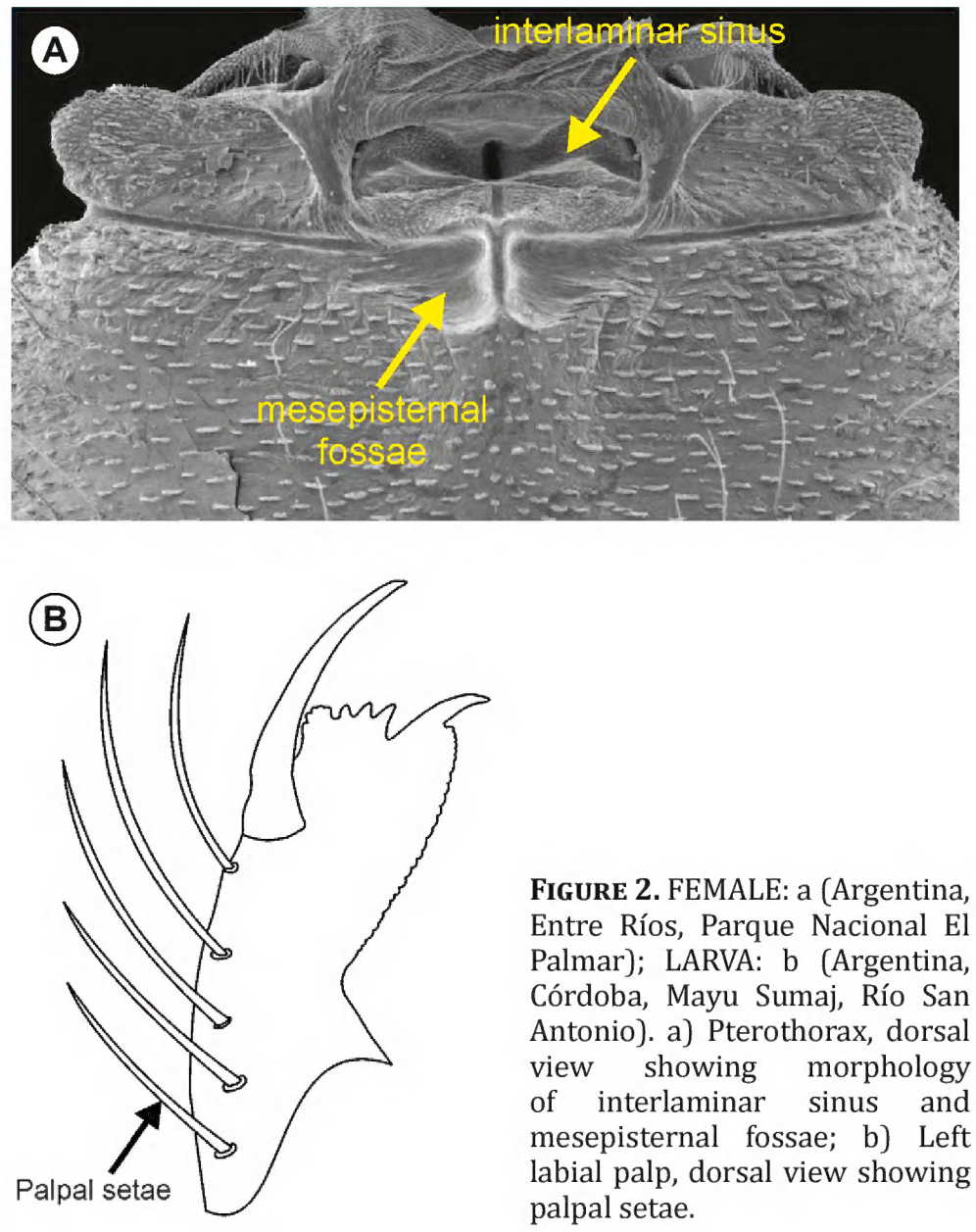

Figure 2. FEMALE: a (Argentina, Entre Ríos, Parque Nacional El Palmar); LARVA: b (Argentina, Córdoba, Mayu Sumaj, Río San Antonio). a) Pterothorax, dorsal view showing morphology of interlaminar sinus and mesepisternal fossae; b) Left labial palp, dorsal view showing palpal setae.

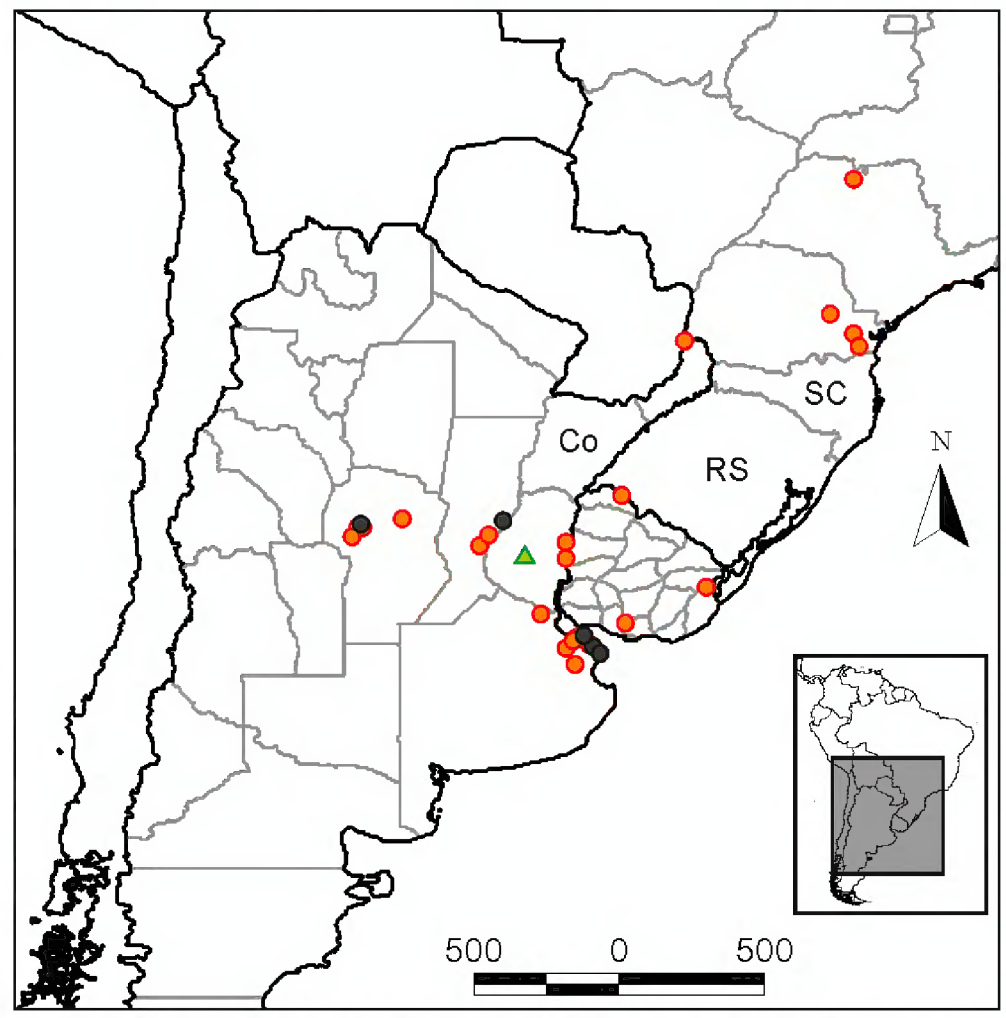

Figure 3. Map of South America showing records of *Acanthagrion hildegarda*. Black dots: previously published records; orange dots: new records; green triangle: type locality.

Table 1. Locality data of *Acanthagrion hildegarda*.

LOCALITY	COORDINATES	ALTITUDE	LOCATION OF SPECIMENS / BIBLIOGRAPHIC REFERENCE
Argentina, Buenos Aires Province, Coronel Brandsen	35°10'26'' S, 58°14'02'' W	19 m	MLP
Argentina, Buenos Aires Province, Isla Paulino, Arroyo Caracol Chico	34°50'06'' S, 57°52'42'' W	6 m	MLP
Argentina, Buenos Aires Province, Isla Talavera	34°06'09'' S, 58°59'51'' W	7 m	MLP
Argentina, Buenos Aires Province, Laguna del Burro	35°41'39'' S, 57°55'19'' W	6 m	MLP
Argentina, Buenos Aires Province, Magdalena	35°04'35'' S, 57°31'03'' W	9 m	MLP
Argentina, Buenos Aires Province, Punta Blanca	34°56'15'' S, 57°40'59'' W	5 m	MLP
Argentina, Buenos Aires Province, Punta Indio, Arroyo El Destino	35°08'15'' S, 57°23'38'' W	7 m	MLP; Muzón *et al.* 2001
Argentina, Buenos Aires Province, Punta Indio, Arroyo sin Nombre Sobre el km 223 de la Ruta Provincial 11, 1,5 km al N del Arroyo La Matilde	35°20'36'' S, 57°11'04'' W	4 m	MLP; Muzón *et al.* 2001; von Ellenrieder and Lozano, 2008; Garrison *et al.* 2010
Argentina, Buenos Aires Province, Punta Lara	34°47'23'' S, 58°00'00'' W	5 m	MLP; von Ellenrieder, 2000
Argentina, Córdoba Province, Colonia Flor Serrana, Estancia Santa Rosa, 18 km al O de Villa Carlos Paz	31°25'18'' S, 64°41'26'' W	1405 m	MLP
Argentina, Córdoba Province, Mayu Sumaj, Río San Antonio	31°27'04'' S, 64°32'55'' W	760 m	MLP
Argentina, Córdoba Province, Mina Clavero, Nacimiento del Río Clavero	31°42'34'' S, 64°53'50'' W	1646 m	MLP
Argentina, Córdoba Province, Salsipuedes	31°09'00'' S, 63°19'00'' W	744 m	FML
Argentina, Córdoba Province, Tanti	31°20'00'' S, 64°36'00'' W	996 m	MLP; Rodrigues Capítulo and Muzón, 1989
Argentina, Entre Ríos Province, Arroyo Urquiza	32°23'00'' S, 58°14'00'' W	15 m	MLP
Argentina, Entre Ríos Province, Lucas Gonzalez	32°23'08'' S, 59°31'44'' W	84 m	Gloger, 1967
Argentina, Entre Ríos Province, Parque Nacional El Palmar, Camino a Arroyo El Palmar,	31°53'49'' S, 58°14'43'' W	11 m	MLP
Argentina, Entre Ríos Province, Parque Nacional El Palmar, Camino a Arroyo Los Loros	31°51'51'' S, 58°13'46'' W	18 m	MLP
Argentina, Entre Ríos Province, Parque Nacional El Palmar,	31°52'06'' S, 58°12'33'' W	28 m	MLP
Argentina, Misiones Province, Arroyo Frente al Camping El Pindó	25°36'41'' S, 54°33'48'' W	195 m	MLP
Argentina, Santa Fe Province, Cayastá	31°12'00'' S, 60°10'00'' W	25 m	Rodrigues Capítulo and Muzón, 1989
Argentina, Santa Fe Province, Coronda	31°58'22'' S, 60°55'09'' W	19 m	MLP
Argentina, Santa Fe Province, Madrejón Don Felipe	31°38'51'' S, 60°36'16'' W	12 m	MLP
Brazil, Paraná State, Castro	24°47'32'' S, 50°00'42'' W	995 m	MNRJ
Brazil, Paraná State, Curitiba	25°25'42'' S, 49°16'24'' W	921 m	MNRJ
Brazil, Paraná State, Rincão, Tijucas do Sul	25°48'50'' S, 49°08'05'' W	850 m	MNRJ
Brazil, São Paulo State, Onda Verde, Fazenda São João	20°37'03'' S, 49°18'01'' W	523 m	MNRJ
Uruguay, Artigas Department, Río Cuareim	30°24'35'' S, 56°28'22'' W	127 m	MLP
Uruguay, Florida Department, 25 de Agosto	34°24'42'' S, 56°24'08'' W	19 m	MLP
Uruguay, Treinta y Tres Department, Río Cebollatí, Picada de Techera	33°15'08'' S, 53°54'06'' W	12 m	MLP

Acknowledgments: Thanks to Janira Martins Costa for her kindness and help while examining the MNRJ collection and to Natalia von Ellenrieder and Javier Muzón for their critical reading of the manuscript.

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Received: September 2011
Accepted: December 2011
Published online: February 2012
Editorial responsibility: Fabio de Oliveira Roque